

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
10 February 2005 (10.02.2005)

PCT

(10) International Publication Number  
**WO 2005/012184 A1**

(51) International Patent Classification<sup>7</sup>: C02F 1/06,  
B01D 1/26

DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM,  
HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK,  
LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX,  
MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG,  
SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC,  
VN, YU, ZA, ZM, ZW.

(21) International Application Number:  
PCT/BR2003/000108

(84) Designated States (*regional*): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,  
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,  
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(22) International Filing Date: 1 August 2003 (01.08.2003)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant and

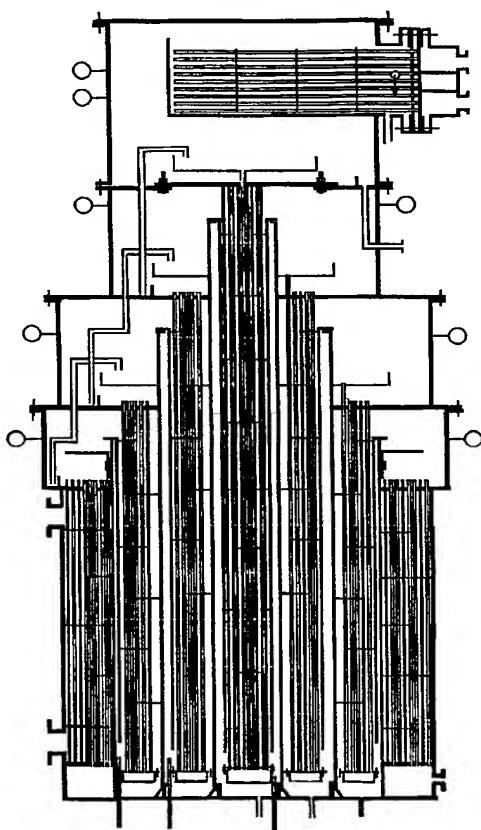
(72) Inventor: COSTA, Sergio, Martins [BR/BR]; Av. dos Navegantes 137, Itapirubá, 88780-000 Imbituba, SC (BR).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: DESALINATION MACHINE



(57) Abstract: A compact and economical array of vertical tube evaporators is disclosed in a multi-effect process, for desalination of sea water, brackish water, and in general to any water with dissolved solids, in order to produce fresh water for oil offshore platforms, ships, and for some arid locations, using rejected waste heat of thermal machines. This invention is based on a concentric disposition of the evaporators or stages, having three different specially designed evaporators, which the first stage is a shell and tube evaporator built in a ring format, named Ring Shell And Tube Evaporator, including an internal shell, and having a vapour chamber above its upper tubesheet; the intermediate stage is a bundle of tubes in a ring format named Ring Bundle Evaporator, having a vapour chamber above its upper tubesheet; and the last stage that is a bundle of tubes in a circular arrangement named Cylindrical Bundle Evaporator.

WO 2005/012184 A1